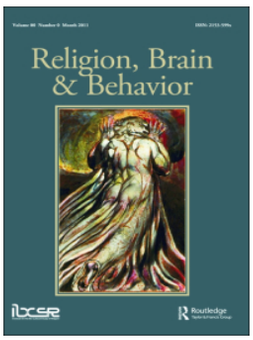

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# Toward an evolutionary-science based metaethics

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COMMENTARIES

# Toward an evolutionary-science based metaethics

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## Introduction

We are confronted with formidable crises in the twenty-first century, ranging from massive habitat loss (see UN, 2019), to divisive political and religious ideologies (e.g., McCoy & Somer, 2019), to humankind's access to weapons of annihilation (Bryan & Victor, 2014). These crises, alongside others, threaten our species' future. They also render us, by some estimates (e.g., Sanderberg & Bostrom, 2008), with a 19% probability of going extinct by the end of the century. Given these odds, and the apparent urgency of addressing the climate crisis alone (Future Earth, 2020), we may wonder: how can we as a species overcome the existential challenges that threaten our future and much of the life on our planet?

The answer, according to Cliquet and Avramov in *Evolution Science and Ethics in the Third Millennium*, is advancing science and the influence of culture on human development by means of evolution science. After all, evolution science, they argue, is necessary for illuminating pathways toward adaptive cultural innovations and providing a rationale for developing a universal morality, a requisite for humankind's future (p. v). Moreover, evolution science can serve as the foundation for, and can synthesize the body of science that informs, the long-term survival of the human species (pp. 221–28, 412).

Finding myself at the crossroads of human rights and science, I have taken great interest in Cliquet and Avramov's book, especially as it concerns ethics. Here, I want to defend a qualified version of Cliquet and Avramov's main argument as what I will characterize as a metaethics for informing how we think about morals, values and ethics in the twenty-first century. My discussion will proceed as follows. Before offering a defense of their argument as a form of metaethics, I will first render my understanding of Cliquet and Avramov's central ideas. In so doing, I will also highlight some of the more controversial arguments in their book, which are potential sources for scholarly debate. I will then make the case that what Cliquet and Avramov have done well, and what constitutes the strength of their book, is provide a comprehensive view of evolution science as a metaethical frame for conceptualizing ethical decision-making in the third millennium.

## Taking a broad evolutionary perspective

To defend the centrality of evolution science for ethics, Cliquet and Avramov draw widely from and base much of their book on the first and second Darwinian Revolutions (e.g., Machalek & Martin, 2004; Wright, 1994). From these discoveries, Cliquet and Avramov claim, rather unobjectionably, that evolution science provides key insights into human behavior (e.g., inclusive fitness, kin selection, reciprocal selection, etc., pp. 1–84). Critical to their subsequent discussion, however, is the additional claim that these insights entail factual support for deontic statements about ethical human conduct. By *ethics*, then, the authors mean the study of what is good but also particular human actions, such as cooperative social relations, and performative acts that are inspirational and necessary for advancing hominization and modernization, including support for ecological sustainability, equity, and genetic engineering (pp. 189–242).

In order to appreciate these claims, it will be helpful to understand a few underlying concepts. *Hominization* is understood as the augmentation of cultural influences on ontogenetic development, and any adaptive changes to genetics that contribute to human survival and the next stage of

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hominin evolution (pp. 208–9). *Modernization* is taken to mean the development of science—i.e., humankind's cumulative knowledge and understanding of reality—which has complemented changes in morality and allowed humankind to intervene effectively in society and the environment (p. 14). For Cliquet and Avramov, advancing hominization and modernization is critical for both our survival and morality. *Morality* is understood widely enough to include the values and principles held by persons and communities, the ensemble of which comprises ethics or what people consider good and bad (p. 17).

Accordingly, evolution science informs Cliquet and Avramov's envisioned system of ethics which is said to be capable of setting the phylogenetic enhancement of hominization and modernization as its central goal, and the survival and adaptation of the species as the ultimate good (pp. 195, 402). What is defended, then, is an evolution-based ethics, or, more precisely, ethical human conduct based on scientific knowledge of such things as human cooperation (p. 36), naturally selected moral sentiments (p. 44, 74), and adaption (p. 72). Some of the upshots of centering ethics on evolution science is that it gives ethics a scientific foundation (p. 52); offers coherence to the complete program of what it means to be human—i.e., genetic, developmental, and cultural factors (p. 192); and provides sufficient breadth for a universal morality, as opposed to extant ingroup moralities that limit human cooperation (p. 194). Evolution science is also the best way for us to understand hominization itself and thus advance the science of modernization toward a holistic universal morality that is capable of sustaining humankind (p. 175, 184, 209).

## Controversial implications

There is much to admire about Cliquet and Avramov's book, and several positive things could be said about it, given its remarkable depth and extensive breadth. For sake of brevity, however, I wish to focus on two issues before offering my defense of their argument as a form of metaethics. These issues are as much caveats as they are criticisms that deserve further attention.

The first is that this book is a daring scientific and philosophical treatise, as the authors themselves recognize (p. 192). Like most daring books, it is likely to promote a great deal of discussion and debate among scientists and ethicists alike. A few arguments that are likely to garner attention are that organized religion and religiosity are no longer adaptive (p. 132); that biology as a scientific discipline was responsible for social movements in the nineteenth and twentieth centuries, such as women's liberation (pp. 171–72, 267); and that science is on its way to swallowing up cultural differences worldwide (p. 202). These are bold claims that serve as counterpoints to bodies of literature defending the very opposite conclusions—for example, that religion in many environments is adaptive (e.g., Alcorta & Sosis, 2005; Matthews, 2012); that modern social movements played an equal and reciprocal role in advancing science (e.g., Moore & Hoffman, 2013); and that skepticism about science (Achenbach, 2015) and cultural diversity remain fairly prevalent worldwide (e.g., Celikkol et al., 2017; UNESCO, 2009).

Even bolder are Cliquet and Avramov's arguments for controversial topics such as euthanasia in the dying process (pp. 251–54), societal intervention in reproduction to prevent the spread of "weak alleles" and dysgenic human qualities such as IQ deficiencies (p. 372), and a newly qualified form of eugenics that promotes "favorable" genetic features (pp. 374–99). Critical readers may find these discussions alarming due to the cruel legacies left by social practices such as eugenics in the twentieth century (e.g., eugenic sterilization in the United States ceased only in 1978; see U.S. Department of Health, Education, and Welfare, 1978). However, Cliquet and Avramov offer considerable arguments in their defense. Such a defense reminds eugenics skeptics, like me, that despite wanting to keep eugenics and talk of dysgenic-control buried in the dustbin of "bad science," we cannot ignore these issues, if only because advancements in science reintroduce them in new forms. For that reason, Cliquet and Avramov's daringness and interest in controversial topics invite fellow scholars (and, arguably, force those of us who are otherwise skeptical or reluctant) to wrestle with difficult questions at the intersection of evolution science and ethics. Granted, I disagree with Cliquet and

Avramov's inferences about these topics, but it is my hope that readers will at least engage their discussions with a balance of criticalness and understanding of the authors' primary aim—again, to approach a universal morality from the vantage point of evolution science.

The second and related thing I want to say is that Cliquet and Avramov's notion of evolutionary ethics could easily be misunderstood. The reason is that Cliquet and Avramov discuss evolution science, the alleged centerpiece of their entire argument, as if it were already a burgeoning ethical system, the foundation of or frame for ethics in general, and a necessary condition for a universal morality in particular. Of course, these facets need not be mutually exclusive, and the authors provide interesting arguments for each. A critical reader may ask, however, whether Cliquet and Avramov oversell evolution science by having it do all of these things. Can evolution science inform, serve as the basis of, and function as the frame for a universal ethics?

In what remains of this article, I will argue that the strength of Cliquet and Avramov's argument is not in defending evolution science as an inclusive and complete science for ethics, but rather in positioning evolution science as the centerpiece for a metaethics that can inform meta-analyses of normative ethics. Attempting to do more, and in particular, elevate evolution science to the level of ethics or reduce ethical concepts to evolution science leads to a potential bankruptcy of both evolution as an objective field of study and ethics as a discourse grounded in moral reasoning. As I believe the authors would ultimately agree, evolution science is a necessary frame for metaethics but not a sufficient condition or source of content for normative ethics.

## A system, foundation, or frame?

A common thread throughout Cliquet and Avramov's book is the claim that evolution science can inform morality and thereby function as a key part of a complete system of ethics. In defending this claim, the authors provide an impressive and comprehensive review of evolution science, which includes the modern synthesis (pp. 1–9); the evolutionary processes that contribute to human morality (pp. 19–43, 59–84); evolutionary theories of senescence (pp. 242–49); sex variability (pp. 258–266); individual variability (pp. 277–81); interpersonal relations (pp. 288–95); kinship and family (pp. 308–11); ingroup/outgroup relations (pp. 326–28); state relations (pp. 331–33); population growth (pp. 341–42); and the history of evolutionary ethics (pp. 43–58). Building on this historical overview, Cliquet and Avramov infer that an evolutionary ethics—i.e., a sound account of how evolutionary theory bears on morality and ethics—should account for the following: the evolutionary foundation of morality, development of moral values, and influence of moral values on human evolution (pp. 42–3).

It is difficult to dispute these three aims, or the role of evolution in shaping our morality. As the authors aptly illustrate, our moral sentiments have a phylogenetic and ontogenetic history (p. 44), and the particular morals we adopt depend heavily on our physiology, development, and enculturation (see also Krebs, 2015). It is also clear that morality is a cultural adaptation (p. 8) for being a functional member of a group (p. 63, 327). Thus, the authors echo Krebs (2011) in saying, "The function of concepts of morality is [indeed] to induce individuals to uphold the social orders of their groups by constraining their selfish urges and biases" (p. 27; as cited by Cliquet & Avramov, 2018, p. 65).

However, being a sociable member of a group is not the only function of morality (see Fitspatrick, 2016). The historical persistence of moral innovations, including the development of universal prescriptions, such as human rights, indicate that many moral precepts are derived from reflection and moral reasoning. From an evolutionary standpoint, moral reasoning is likely a byproduct of other cognitive adaptations, akin to acquired skills in reading, writing, and mathematics, including innovations thereof (Street, 2006, pp. 142–43; as cited in Fitspatrick, 2016). It would seem, then, that our morality, in the fullest sense, outstrips our natural inclinations toward ingroup cooperation—viz. it surpasses the evolutionary foundations of moral dispositions, including our development and socialization. In short, morality is more than our genetic, behavioral, and symbolic inheritance from

previous generations (see Jablonka & Lamb, 2005) and involves moral reasoning about the good, which we develop generationally as a science as much as an art relative to our particular time and place.

The authors appear to appreciate this point, insofar as they draw from multiple moral arguments and ethical systems (from religion to ecologism; see pp. 85–184) to defend their understanding of what is good. For Cliquet and Avramov, the good is that which advances human adaptations; in particular, it is progressive hominization and modernization that leads to the survival of our species. To attain this good, Cliquet and Avramov insist that we as a species require a universal morality, where multiple communities and cultural systems work in harmony toward the next phase of human evolution. Of course, this universal morality has yet to be attained—and that is an important point for the critique that follows. For Cliquet and Avramov stress that their envisioned universal morality is necessarily shaped and entailed by evolution science (pp. 185–242), but is nevertheless a morality for which we ought to aspire (pp. 185–193, 239, 337, 402). I will suggest that the multiple components promised by evolution science—i.e., entailing, being foundational for, and framing ethics—is an oversell that blurs the line between description and prescription.

To illustrate, I wish to begin from the aspirational component, in which the authors implore *evolutionaries* to defend moral precepts that Cliquet and Avramov themselves claim are entailed by evolutionary science. Two such precepts are that we ought to increase human capabilities and decrease both the human population and dysgenic qualities of humans everywhere. To adopt these precepts, evolutionists are to draw from evolution science and secular philosophies, such as humanism, to convince ethicists, religious leaders, and policy makers that decreasing the population and preventing the spread of dysgenic qualities, such as those contributing to low IQ scores, is good (p. 399). The background premises here are that evolution science informs both our current moral sensibilities and the moral precepts we ought to adopt; and unlike other ethical systems, evolution science can, in fact, bring together different ethical views by virtue of its consistency with science and naturalism (p. 401). Hence, an additional background assumption to the entire argument is that morals must be grounded in ideas of naturalism entailed by the sciences.

Building on these premises, Cliquet and Avramov spend a good amount of time defending the notion that a marriage between evolution science and current ethical systems is indeed possible. From a naturalistic standpoint, they argue that ethical systems are, after all, adaptations for social living, and that various systems of ethics share a goal that is best explained by evolution science: that is, humans must strive toward phylogenetic enhancements or cultural adaptations, such as improving modes of cooperation and modernization (pp. 192–5, 402). Consequentially, one of the highest ethical goods to follow from both evolution science and systems of ethics is that humankind must be prevented from going extinct, regressing, or stagnating (pp. 202–3). And evolutionists ought to take the lead in achieving this good, given their expertise in evolution science, by working with other ethicists and actively progressing hominin evolution (pp. 202–9).

These are remarkable ideas. The difficulty, however, is that Cliquet and Avramov often refer to insights from evolution science, including its link to deontic implications, as if evolution constituted a set of beliefs already capable of informing humankind of solutions to present-day crises (e.g., pp. 402–5). Yet, the authors say elsewhere that evolution science can serve as a foundation for a universal morality (pp. 44, 402), and also function as a frame for considering ethical matters (p. 192). Perhaps evolution science can do all of these things—but I have my doubts. The fact that Cliquet and Avramov's universal morality is one for which we ought to aspire entails that evolution broadly defined does not entail all of the precepts they defend. After all, that we ought to aspire to a morality informed by evolution science requires the authors to import from elsewhere the very deontic claim that is supposed to follow from evolution science. Put simply, even if evolution entails goods that are worth pursuing, the claim that we ought to then value those goods for the sake of humankind is an additional deontic claim not provided by evolution science. Further, a defense of active neo-Malthusian practices is neither entailed by evolution science nor is it a given that it is good. Further still, the claim that evolution science can, in fact, bring together ethical systems to forge a universal morality

for humankind is an empirical one for which there is currently no evidence. As a result, I have serious doubts about Cliquet and Avramov's utopian view that evolution science is the panacea that will unite humanity and save us from extinction.

It seems to me the authors have offered three possibilities for evolution science: it is the heart of an envisioned ethical system, a foundation for a possible universal morality, or a frame for considering ethics. Regarding these, the one that appears to work best, which is the soundest and least problematic is the third option: evolution science can inform a metaethics for evaluating how we think about ethical decision-making in the twenty-first century.

## *Facing up to the is/Ought problem*

Cliquet and Avramov offer several reasons for prioritizing evolution science in their system of ethics. Here are a few of the most important: humankind requires (1) ongoing exo-somatic, cultural interventions to achieve optimal biological functionality, (2) mastery of inter-individual and inter-group relations, and (3) cultural evolution of innovations to control critical adversities such as disease, war, and environmental destruction (p. 192). They add that without evolution science, we would struggle to attain these prerequisites for survival, to understand ethics as natural phenomena (p. 48), or to address ethical problems arising from evolutionary mismatches (p. 194). The underlying logic is that because ethical behavior results from natural selection, morality is itself natural (pp. 19–25, 48). And we are finally at a stage in our history when we can use evolution science to enact culture, thereby overcoming evolutionary mismatches (p. 194), ensuring that the human species adapts to changing environments (p. 405), and advancing hominization and modernization (p. 412).

It is indisputable that ethics is the product of both genetic and cultural evolution (p. 19), and that ethical ideas, like genetic variants, are subject to selective pressures that we can now partially manipulate (p. 25). Even then, while evolution science provides us with a way of manipulating nature in our own favor, and even explains ethics naturalistically, it is not a given that it offers an ethics that we ought to practice—or that an ethics derived from evolution science entails the prescriptions that Cliquet and Avramov say it does.

As an illustration, one could produce an equally robust account of love from an evolutionary perspective. Such an account might, like Cliquet and Avramov's book, explain love's evolutionary underpinnings and also point to ways of manipulating our environments for having greater compassion for others or even more intense romantic relationships with partners (e.g., see Sternberg & Weis, 2006). An author may even say that he or she has derived certain ethics from an evolutionary description of love—for instance, that we ought to practice free love. Yet, unlike descriptive claims, which are based on facts, ethical precepts are often open questions (Moore, 1903). That is, when someone tells us "X is good" or "we ought to do X," we find ourselves asking whether the purported precept is indeed good, and unlike a descriptive claim, we cannot easily verify the precept by consulting facts, figures, or investigations. Rather, we must also deliberate about it. Returning to the example of love, it would therefore be an open question whether the precept "we ought to engage in free love" was entailed by the evolutionary description of love; and the description itself would not automatically entail that the precept is something we ought to do universally, let alone practice individually.

More critically, when it comes to evolutionary accounts of ethics, it is often the case that the theorist claims to advocate ethical principles *that are derived from evolution science*, but these derivations require remarkable leaps in logic from description to prescription. Upon scrutiny, in worst case scenarios, these derivations are little more than the theorist defending his or her preferences or prejudices with so-called evolutionary justifications (viz. Social Darwinism).

For example, several theorists seem to believe that eugenics is implied by evolution science, including Cliquet and Avramov (pp. 374–99). However, I have yet to see a convincing argument to the effect that eugenics follows from the descriptive claims of evolution science. In all cases, eugenic arguments stem from a premise outside of science. In Cliquet and Avramov's case, it is

the premise that progressive hominization requires a bioprogram in which individuals control the propagation of their own dysgenic qualities in order to benefit the ontogenetic and phylogenetic development of humankind (pp. 232–33). The key premises here are that (1) we ought to advance human ontogenetic and phylogenetic evolution and (2) we cannot do it without controlling for dysgenic qualities. Those premises are often taken as first principles for proponents of eugenics but are not a given from evolution science.

To see why, recall that natural selection and evolution are neutral, and whatever goods or values we claim to derive from descriptions of evolutionary processes are actually based on ethical systems we import into them. In other words, a naturalistic description of why and how a suite of behaviors evolved does not entail deontological prescriptions for how we should relate to them. Furthermore, evolution science may shed light on how we do behave, but it does not tell us how we ought to behave.

This is the classic problem summarized by Hume's guillotine and G.E. Moore's naturalistic fallacy, and Cliquet and Avramov attempt to dissolve it in their book (pp. 46–50). Nevertheless, instead of providing a defense against it—which I believe is necessary for the soundness of key parts of their argument—the authors simply wave the problem away. They do so by substituting a novel defense with blanket appeals to Wilson (1998) and Steven Pinker's (2002) assertions that there is no is/ought problem after all (p. 47). For appealing to the "is/ought problem," they claim, commits the fallacy of assuming that "ought" implies "is," and also overvalues the fraught system of cultural relativism. They also add that "if ethics could not be based on facts, what is left for justifying moral principles?" (p. 48). Thus, they do not take on the difficult problem of leaping from description to prescription or explain why ethical claims are unjustified if not based on natural facts, but instead engage in a tu quouque appeal.

As much as I admire Cliquet and Avramov's overall book, their section on Hume's guillotine and Moore's naturalistic fallacy is, unfortunately, shallow. Making the leap from fact to norm is a notorious problem in normative ethics (e.g., Black, 1964; Machery & Mallon, 2010), and Cliquet and Avramov's project requires that they help us face up to the "Is/Ought" problem instead of glossing over it. Admittedly, Hume and Moore's challenges are not without their own shortcomings (e.g., Boyd, 1988), and the description-to-prescription challenge is not insurmountable. My point is that without a sturdier bridge from the facts of evolution science to the deontic prescriptions of ethics, it is unclear whether Cliquet and Avramov's argument, which attempts to posit a universal morality centered on evolution science, is sound.

## *Do morals need a naturalistic foundation?*

Another critical point in Cliquet and Avramov's argument is the claim that "modernity lacks a secular worldview that gives meaning and purpose to human existence and continuity" and that "the fragmented modern secular ideologies lack a grand and holistic vision leading to an inclusive morality" (p. 185). Be that as it may, the connecting premise from this idea to their main conclusion—viz. that a universal morality would entail advancing hominization and modernity—is that "evolution science […] provides a solid, naturalistic basis for embedding values and norms," without which we could not "secure a safe and progressive future" (p. 402). While evolution science can help us analyze ethics (as I discuss below), it is difficult to see how evolution science could offer a new, global ethic that would overcome humankind's leanings toward ingroup morality (p. 152), while simultaneously providing the groundwork to secure our future (p. 153). Accomplishing all of these lofty goals—uniting humanity's various moralities, bringing humankind together, and serving as the very steppingstone to the species' future—is much to expect from evolution science. Given its aptness to explain why we have morals, it would rather seem that instead of serving as the critical foundation or necessary condition for a universal morality, evolution science provides the securest explanatory framework for why we would adopt certain values such as humanism (pp. 176–81), ecologism (pp. 181–84) and ecological sustainability (pp. 196–98). It can also shed light on how we

innovate culture to bring about the better angels of ourselves, so to speak. Whether it can unite humanity's morals, and humankind in general, is yet to be seen.

Hence, a lingering two-part question I have for Cliquet and Avramov is: Do we need a naturalistic foundation for our universal morals; and if a moral precept is not entailed by evolution science, does it not have value? For instance, let us suppose that we find no evolutionary foundation for the core precept of human rights, namely, that *every* person—regardless of their allelic qualities and whether they possess significant dysgenic features—has dignity, and is therefore deserving of inalienable human rights (UDHR; see UN General Assembly, 1948). If this is inconsistent with evolution science (which I believe the authors would say it is; see p. 191), are we then to disregard such a moral precept? I should think not. However, if Cliquet and Avramov believe we should, then something is amiss. Either evolution science cannot serve as the foundation for universal morality, or the universal morality provided by naturalistic explanations is, again, not one we ought to adopt.

### *A metaethics worth considering*

The real strength of Cliquet and Avramov's argument, I believe, is that they offer a formidable evolutionary metaethics. At various points in their discussion, the authors depart from an ethics strictly grounded in evolution science and instead argue for a combination of evolution with secular moral ideologies. When doing so, they brilliantly illuminate what ethical statements, properties, and attitudes are: they are adaptations for social life. That is an important insight and arguably the best frame for considering ethics. What is more, an evolutionary explanation of ethics can be combined with Enlightenment ideals, humanism, and modern philosophy to help us understand what is good and what is bad (pp. 198–99). Thus, Cliquet and Avramov provide an explanation of evolution science as a window through which we can consider extant moral systems and analyze our current and future moral decision-making.

Accordingly, at the strongest points in their book, Cliquet and Avramov appear to outline a robust evolutionary metaethics: a philosophical exercise that positions one's ethical analysis above normative ethics, which concerns prescriptive questions such as "What ought we to do?", and focuses instead on descriptive queries such as "What is morality?" or "How can we distinguish the good from what is bad?" A great deal of metaethics, to the detriment of the discipline, has excluded evolutionary theory from its analytical tools until the last two decades (for exceptions, see Greene, 2008; Haidt, 2001). Since then, evolutionary metaethics has gained footing among semantic metaethical views, such as noncognitivism, and aligns well with moral anti-realism. In line with these theories, Cliquet and Avramov provide a convincing answer to the metaethical question, "What is goodness?" Viewed through the window of evolution science, the good is not a property in the world independent of humans (something that has bogged down metaethics), but rather that which concerns hominization and modernization, including the ecological underpinnings for human survival. This is an informed vantage point for metaethics which connects the most powerful theory in science to the study of ethics. Yet, to stress one of my central points, metaethics is not concerned with answering what we ought to do, but rather with how to think about that which we are doing when we make normative claims, thereby helping us understand normative ethics. By defending the view that normative ethics concerns adaptations to social life, Cliquet and Avramov advance an evolutionary metaethics that is indeed worth considering.

## Conclusion

There is much to say about Cliquet and Avramov's book, and what I have highlighted here only scratches the surface. Given the limitations of such a review, I did not address equally interesting ideas such as the hominization process from Australopithecines to Homo sapiens sapiens (p. 9), or the details of Cliquet and Avramov's argument for advancing hominization alongside modernization. Equally as fascinating are their finer points about moral systems such as spirituality, atheism,

and nationalism. What I have concentrated on, instead, is the book's central issue: namely, taking a broad perspective of evolution science. I argued that this viewpoint, as defended by Cliquet and Avramov, leads to some potentially controversial claims and open questions regarding the coherence and foundation of evolution science for ethics. Nevertheless, what Cliquet and Avramov do, which is admirable and strongly defensible, is offer a robust case for an evolutionary metaethics.

## Disclosure statement

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# A moral obligation to promote future human evolution?

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## Introduction: evolutionary science can help us achieve the future we want, but how could it tell us what future we *should* want?

There is much to admire in the target article, and the book on which it is based (Cliquet & Avramov, 2018). I certainly endorse using evolutionary science to understand the biology, psychology, culture and morality of modern humans; to make any sense at all of our biocultural present, we must understand how and why this present was created by the evolutionary past. Despite my enthusiasm for using evolutionary science to understand human affairs, however, I am less sure of its suitability as the basis for an ethical/moral system. The target readings provide an excellent exploration of this suitability, but having considered their perspective, I still have some questions.

Before saying more about these questions, I should make one clarification. I have done a lot of research on the evolution of cooperation and morality (e.g., Price, 2006; Price et al., 2002, 2014, 2017), but contrary to the target book (Cliquet & Avramov, 2018, p. 37), I did not author the Price Equation. I wish I could take credit, but George Price (1970, 1972) came up with his famous formalization of multilevel selection before I was even born.

Now let me characterize my own thinking on evolution and ethics, so I can point out how it converges and diverges with the authors of the target readings. I regard evolutionary science as relevant to ethics primarily because by learning about the origin and evolution of morality in past environments, we empower ourselves to change moral behavior, if need be, to maximize its adaptedness to present environments. The more we know about why a morally-charged behavior – such as engaging in reciprocity, or respecting a food taboo – arose and persisted in the past, the better we can assess that behavior's relevance in present environments, which may be radically different from those in which it evolved. Further, by learning about human adaptations for all kinds of behavior, both morally desirable and otherwise, we empower ourselves to promote the good and suppress the bad. Humans, for instance, appear to have some adaptations for violent conflict, and others for peaceful dispute resolution (McCullough, 2008; Pinker, 2011). The more we understand how these different categories of psychological mechanisms are elicited by different kinds of environmental information, the more able we will be to discourage violence and encourage peace.

I believe the authors of the target readings would agree with my views expressed so far, as they often reflect on how some morally-charged behaviors seem better-adapted to environments of the past than to those of the present. They also emphasize that by applying what we know about the evolved nature of human morality, we put ourselves in the best possible position to overcome the

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